

I claim:

- 1 1. A camera comprising:  
2 a main body supporting a taking lens and a closeable exposure aperture; the main body  
3 defining a cartridge chamber and a film chamber disposed on opposite sides of the exposure  
4 aperture, the film chamber being defined at an upper end by an upper wall of the main body and  
5 at a lower end by an endcap assembly, wherein the film chamber is sized to selectively receive  
6 one of a roll of film and a secondary cassette housing a roll of film light-tightly therein;  
7 the endcap assembly including a shutter support plate with an aperture extending  
8 therethrough, the endcap assembly further including a shutter blade movably mounted on the  
9 shutter support plate, wherein the shutter blade is movable between a first position, in which the  
10 aperture is substantially closed, and a second position, in which the aperture is substantially  
11 unobstructed, whereby a shaft can pass through the endcap assembly and into the film chamber  
12 for winding of film into the film chamber; and  
13 a back cover operatively engaging the main body to enclose the chambers light-tightly  
14 therein.
- 1 2. The camera of claim 1 wherein the endcap assembly further includes a second shutter  
2 support plate with an aperture extending therethrough, the apertures in the shutter support plate  
3 and the second shutter support plate being substantially aligned, whereby a shaft can pass  
4 simultaneously through the apertures in both shutter support plates of the endcap assembly and  
5 into the film chamber for winding of film into the film chamber.
- 1 3. The camera of claim 2 wherein the shutter blade is disposed between the two shutter  
2 support plates such that, in the first position, both apertures are substantially closed and, in the  
3 second position, both apertures are substantially unobstructed.
- 1 4. The camera of claim 2 wherein the endcap assembly further includes a spring for biasing  
2 the shutter blade into the first position.
- 1 5. The camera of claim 2 wherein at least a portion of one of the shutter support plates of  
2 the endcap assembly is formed with the main body.

1 6. The camera of claim 2 wherein at least a portion of one of the shutter support plates of  
2 the endcap assembly is formed with the back cover.

1 7. The camera of claim 2 wherein one of the shutter support plates of the endcap assembly  
2 is made of at least two pieces, wherein one piece is formed with the main body and another piece  
3 is formed with the back cover, whereby when the back cover is in the closed position, the first  
4 and second piece engage to form one of the shutter support plates.

1 8. The camera of claim 1 wherein the endcap assembly further includes a spring for biasing  
2 the shutter blade into the first position.

1 9. The camera of claim 1 wherein the shutter support plate of the endcap assembly includes  
2 a collar substantially peripherally surrounding the aperture in the shutter support plate and  
3 extending therefrom.

1 10. The camera of claim 1 wherein at least a portion of the shutter support plate of the endcap  
2 assembly is formed with the main body.

1 11. The camera of claim 1 wherein at least a portion of the shutter support plate of the endcap  
2 assembly is formed with the back cover.

1 12. The camera of claim 1 wherein the endcap assembly is removably mounted on the main  
2 body.

1 13. The camera of claim 12 wherein the main casing provides a cradle at the lower end of the  
2 film chamber on which the endcap assembly can be mounted.

1 14. The camera of claim 1 wherein the cartridge chamber is sized to selectively receive one  
2 of a 35 millimeter film cartridge and a primary cassette of a DCS film system.

1 15. The camera of claim 14 further including one of a 35 millimeter film cartridge and a  
2 primary cartridge of a DCS film system disposed in the cartridge chamber, the cartridge  
3 containing at least one end of a roll of film light-tightly therein.

1 16. The camera of claim 15 wherein at least a portion of the film extending from the 35  
2 millimeter film cartridge is wound in a roll in the film chamber.

1 17. The camera of claim 16 wherein the roll is housed light-tightly within a secondary  
2 cassette.

1 18. The camera of claim 17 wherein a lower side of the secondary cassette contacts the  
2 endcap assembly of the film chamber.

1 19. The camera of claim 17 wherein a lower side of the secondary cassette is substantially  
2 adjacent to the endcap assembly of the film chamber.

1 20. The camera of claim 17 wherein the secondary cassette is spaced from the endcap  
2 assembly of the film chamber.

1 21. The camera of claim 1 wherein the upper wall and an inner face of the endcap assembly  
2 of the film chamber are substantially smooth.

1 22. The camera of claim 21 wherein the upper wall and the inner face of the endcap assembly  
2 of the film chamber each define a plane, wherein the planes are spaced at least about 36.7  
3 millimeters apart.

1 23. The camera of claim 21 wherein the upper wall and the inner face of the endcap assembly  
2 of the film chamber each define a plane, wherein the planes are spaced at least about 35.2  
3 millimeters apart.

1 24. A method of loading film into a camera assembly comprising the steps of:

- 2           (a)     providing a camera assembly having a main body and a back cover, the back  
3 cover operatively engaging the main body so as to form in part a light-tight film casing;  
4                 the light-tight film casing including a cartridge chamber and a film chamber, each  
5 of the chambers being defined in part by the main body and the back cover, the film chamber  
6 being defined at an upper end by an upper wall of the main body and at a lower end by at least an  
7 endcap assembly, wherein the chambers are disposed on opposite sides of a taking lens  
8 supported on the main body,  
9                 the endcap assembly including a plate with an aperture extending therethrough  
10 and with a shutter blade mounted thereon, wherein the shutter blade is movable between a first  
11 position, in which the aperture is substantially closed, and a second position, in which the  
12 aperture is substantially unobstructed;
- 13           (b)     providing a substantially light-tight sleeve having a proximal end and a distal end  
14 and a longitudinal axis extending therebetween;
- 15           (c)     providing a winding rod having a proximal end and a distal end, at least the distal  
16 end of the winding rod being substantially light-tightly extending into the sleeve from the  
17 proximal end of the sleeve, the winding rod being movable within the sleeve substantially along  
18 the longitudinal axis of the sleeve;
- 19           (d)     placing the distal end of the sleeve light-tightly about the aperture in the endcap  
20 assembly;
- 21           (e)     moving the shutter blade into the second position;
- 22           (f)     moving the distal end of the winding rod through the sleeve and the aperture in  
23 the endcap assembly, wherein at least a portion of the distal end of the winding rod extends into  
24 the film chamber of the camera assembly;
- 25           (g)     placing a film cartridge into the cartridge chamber of the camera assembly;
- 26           (h)     attaching a leader portion of film extending from the film cartridge to the winding  
27 rod;
- 28           (i)     operatively engaging the back cover with the main body so as to light-tightly  
29 enclose the film chamber and the cartridge chamber;
- 30           (j)     turning the winding rod such that at least a portion of film from the cartridge is  
31 wound into a roll in the film chamber;

32 (k) disengaging the winding rod from the leader portion of film and retracting the  
33 winding rod from the film chamber and the endcap assembly; and

34 (l) moving the shutter blade into the first position.

1 25. The method of claim 24 wherein the shutter blade is biased into the first position,  
2 whereby the step of moving the shutter blade into the first position occurs because of the bias  
3 once the winding rod is retracted from the endcap assembly.

1 26. The method of claim 24 wherein the endcap assembly further includes a second shutter  
2 support plate with an aperture extending therethrough, the apertures in the shutter support plate  
3 and the second shutter support plate being substantially aligned such that the winding rod can  
4 simultaneously pass through the apertures in both shutter support plates of the endcap assembly  
5 and into the film chamber, wherein the shutter blade is enclosed between the two shutter support  
6 plates such that, in the first position, both apertures are substantially closed and, in the second  
7 position, both apertures are substantially unobstructed.

1 27. The method of claim 26 wherein the shutter blade is biased into the first position,  
2 whereby the step of moving the shutter moving the shutter blade into the first position occurs  
3 because of the bias once the winding rod is retracted from the endcap assembly.

1 28. The method of claim 24 wherein the shutter support plate includes a collar substantially  
2 peripherally surrounding the aperture in the shutter support plate and extending therefrom, and  
3 the step of placing the distal end of the sleeve light-tightly about the aperture in the endcap  
4 assembly includes mounting the distal end of the sleeve to the collar.

1 29. The method of claim 28 further including the step of inserting a plug into the collar.

1 30. The method of claim 24 wherein the turning step is performed by one of hand or electric  
2 motor.

1 31. The method of claim 24 further including the step of disengaging a film advance wheel  
2 on the main body so as to allow the film to be wound out of the film cartridge and into the film  
3 chamber.

1 32. The method of claim 24 wherein the endcap assembly is removably mounted on the main  
2 body, and further including the step of mounting the endcap assembly onto the main body.

1 33. A method of loading film into a camera assembly comprising the steps of:

2 (a) providing a camera assembly having a main body and a back cover, the back  
3 cover operatively engaging the main body so as to form in part a light-tight film casing;  
4 the light-tight film casing including a cartridge chamber and a film chamber, each  
5 of the chambers being defined by at least the main body section and the back cover section, the  
6 film chamber being defined at an upper end by an upper wall of the main body and at a lower  
7 end by an endcap assembly, wherein the chambers are disposed on opposite sides of a taking lens  
8 supported on the main body;

9 the endcap assembly including at least a shutter support plate with an aperture  
10 extending therethrough and with a shutter blade mounted thereon, the shutter blade being  
11 movable between a first position, in which the aperture is substantially closed, and a second  
12 position, in which the aperture is substantially unobstructed;

13 (b) providing a DCS film system including film, a primary cassette and a secondary  
14 cassette, wherein at least a first portion of the film is housed within the primary cassette and a  
15 second portion of the film is housed within the secondary cassette;

16 (c) inserting the primary cassette of a DCS film system into the cartridge chamber;

17 (d) inserting the secondary cassette of the DCS film system into the film chamber  
18 between the upper wall and the endcap assembly;

19 (e) operatively engaging the back cover and the main body so as to form a light-tight  
20 film casing, wherein the DCS film system is enclosed light-tightly therein.

1 34. The method of claim 33 wherein the film chamber is sized such that, when the secondary  
2 cassette is inserted in the film chamber, the secondary cassette contacts an inner face of the  
3 endcap assembly of the film chamber.

1 35. The method of claim 33 wherein the film chamber is sized such that, when the secondary  
2 cassette is inserted in the film chamber, the secondary cassette is substantially adjacent to an  
3 inner face of the endcap assembly of the film chamber.

1 36. The method of claim 33 wherein the film chamber is sized such that, when the secondary  
2 cassette is inserted in the film chamber, the secondary cassette is spaced from an inner face of the  
3 endcap assembly of the film chamber.

1 37. A camera comprising:

2 a main body supporting a taking lens and a closeable exposure aperture; the main body  
3 defining a cartridge chamber and a film chamber disposed on opposite sides of the exposure  
4 aperture, the film chamber being defined at an upper end by an upper wall of the main body and  
5 at a lower end by an endcap assembly, wherein the upper wall defines an upper plane and an  
6 inner face of the endcap assembly defines a lower plane, wherein the upper and lower planes are  
7 spaced from about 36.7 millimeters to about 37.7 millimeters apart;

8 the endcap assembly including a shutter support plate with an aperture extending  
9 therethrough, the endcap assembly further including a shutter blade movably mounted on the  
10 shutter support plate, wherein the shutter blade is movable between a first position, in which the  
11 aperture is substantially closed, and a second position, in which the aperture is substantially  
12 unobstructed, whereby a shaft can pass through the endcap assembly and into the film chamber  
13 for winding of film in the film chamber; and

14 a back cover operatively engaging the main body to enclose the chambers light-tightly  
15 therein.

1 38. The camera of claim 37 wherein the endcap assembly further includes a second shutter  
2 support plate with an aperture extending therethrough, the apertures in the shutter support plate  
3 and the second shutter support plate being substantially aligned, whereby a shaft can  
4 simultaneously pass through the apertures in both shutter support plates of the endcap assembly  
5 and into the film chamber for winding of film into the film chamber.

1 39. The camera of claim 38 wherein the shutter blade is disposed between the two shutter  
2 support plates such that, in the first position, both apertures are substantially closed and, in the  
3 second position, both apertures are substantially unobstructed.

1 40. The camera of claim 38 wherein the endcap assembly further includes a spring for  
2 biasing the shutter blade into the first position.

1 41. The camera of claim 38 wherein at least a portion of one of the shutter support plates of  
2 the endcap assembly is formed with the main body.

1 42. The camera of claim 38 wherein at least a portion of one of the shutter support plates of  
2 the endcap assembly is formed with the back cover.

1 43. The camera of claim 38 wherein one of the shutter support plates of the endcap assembly  
2 is made of at least two pieces, wherein one piece is formed with the main body and another piece  
3 is formed with the back cover, whereby when the back cover is mounted to the main body, the  
4 first and second piece engage to form one of the shutter support plates.

1 44. The camera of claim 37 wherein the endcap assembly further includes a spring for  
2 biasing the shutter blade into the first position.

1 45. The camera of claim 37 wherein the shutter support plate of the endcap assembly  
2 includes a collar substantially peripherally surrounding the aperture in the shutter support plate  
3 and extending therefrom.

1 46. The camera of claim 37 wherein at least a portion of the shutter support plate of the  
2 endcap assembly is formed with the main body.

1 47. The camera of claim 37 wherein at least a portion of the shutter support plate of the  
2 endcap assembly is formed with the back cover.



1 48. The camera of claim 37 wherein the endcap assembly is removably mounted on the main  
2 body.

1 49. The camera of claim 48 wherein the main body provides a cradle at the lower end of the  
2 film chamber on which the endcap assembly can be mounted.

1 50. The camera of claim 37 wherein the upper wall and the lower wall of the film chamber  
2 are substantially smooth.

1 51. In a camera having a main body supporting a taking lens and a closeable exposure  
2 aperture, the main body defining a cartridge chamber and a film chamber disposed on opposite  
3 sides of the exposure aperture, the film chamber being defined at an upper end by an upper wall  
4 of the main body and at a lower end by an endcap assembly having a movable shutter blade  
5 mounted to a shutter support plate having a closeable aperture, and a back cover operatively  
6 engaging the main casing to enclose the chambers light-tightly therein, the improvement  
7 comprising:  
8 the film chamber being sized between the upper wall and the endcap assembly to  
9 selectively receive one of a roll of film and a secondary cassette housing a roll of film light-  
10 tightly therein.